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PATENT

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12-19-03  
entered

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: FRED B. HOLT *ET AL.*

APPLICATION NO.: 09/629,577

FILED: JULY 31, 2000

FOR: **LEAVING A BROADCAST CHANNEL**

EXAMINER: DAVID R. LAZARO

ART UNIT: 2155

CONF. NO: 4317

Amendment Under 37 C.F.R. § 1.111

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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DEC 17 2003

Technology Center 2100

Sir:

The present communication responds to the Office Action dated November 5, 2003 in the above-identified application. Please amend the application as follows:

Amendments to the Specification begin on page 2.

Amendments to the Abstract begin on page 3.

Amendments to the Claims are reflected in the listing of claims beginning on page 4.

Arguments/Remarks begin on page 8.

**EXHIBIT**

**Ex. 1025**

**Amendments to the Specification:**

Please replace the paragraph beginning at page 1, line 3, with the following rewritten paragraph:

This application is related to U.S. Patent Application No. 09/629,576 entitled "BROADCASTING NETWORK," filed on July 31, 2000 (Attorney Docket No. 030048001 US); U.S. Patent Application No. 09/629,570 entitled "JOINING A BROADCAST CHANNEL," filed on July 31, 2000 (Attorney Docket No. 030048002 US); U.S. Patent Application No. 09/629,577, "LEAVING A BROADCAST CHANNEL," filed on July 31, 2000 (Attorney Docket No. 030048003 US); U.S. Patent Application No. 09/629,575 entitled "BROADCASTING ON A BROADCAST CHANNEL," filed on July 31, 2000 (Attorney Docket No. 030048004 US); U.S. Patent Application No. 09/629,572 entitled "CONTACTING A BROADCAST CHANNEL," filed on July 31, 2000 (Attorney Docket No. 030048005 US); U.S. Patent Application No. 09/629,023 entitled "DISTRIBUTED AUCTION SYSTEM," filed on July 31, 2000 (Attorney Docket No. 030048006 US); U.S. Patent Application No. 09/629,043 entitled "AN INFORMATION DELIVERY SERVICE," filed on July 31, 2000 (Attorney Docket No. 030048007 US); U.S. Patent Application No. 09/629,024 entitled "DISTRIBUTED CONFERENCING SYSTEM," filed on July 31, 2000 (Attorney Docket No. 030048008 US); and U.S. Patent Application No. 09/629,042 entitled "DISTRIBUTED GAME ENVIRONMENT," filed on July 31, 2000 (Attorney Docket No. 030048009 US), the disclosures of which are incorporated herein by reference.

**Amendments to the Abstract:**

Please add the following **new** paragraph as an **Abstract**.

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A2  
A method for leaving a multicast computer network is disclosed. The method allows for the disconnection of a first computer from a second computer. When the first computer decides to disconnect from the second computer, the first computer sends a disconnect message to the second computer. Then, when the second computer receives the disconnect message from the first computer, the second computer broadcasts a connection port search message to find a third computer to which it can connect.

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**Amendments to the Claims:**

Following is a complete listing of the claims pending in the application, as amended:

1-8. (Withdrawn)

<sup>3</sup>  
9. (Currently amended) A method of disconnecting a first computer from a second computer, the first computer and the second computer being connected to a broadcast channel, said broadcast channel forming an m-regular graph where m is at least 3, the method comprising:

when the first computer decides to disconnect from the second computer, the first computer sends a disconnect message to the second computer, said disconnect message including a list of neighbors of the first computer; and

<sup>3</sup>  
when the second computer receives the disconnect message from the first computer, the second computer broadcasts a connection port search message <sup>on the broadcast channel</sup> to find a third computer to which it can connect <sup>in order to maintain an m-regular graph</sup>, said third computer being one of the neighbors on said list of neighbors.

<sup>2</sup>  
10. (Original) The method of claim 9 wherein the second computer receives a port connection message indicating that the third computer is proposing that the third computer and the second computer connect.

<sup>3</sup>  
11. (Original) The method of claim 9 wherein the first computer disconnects from the second computer after sending the disconnect message.

<sup>4</sup>  
12. (Original) The method of claim 9 wherein the broadcast channel is implemented using the Internet.

13. (Cancelled)

14. (Cancelled)

<sup>5</sup>  
~~15.~~ (Original) The method of claim <sup>1</sup>/~~6~~ wherein the first computer and second computer are connected via a TCP/IP connection.

<sup>6</sup>  
~~16.~~ (Currently amended) A method for healing a disconnection of disconnecting a first computer from a second computer, the computers being connected to a broadcast channel, said broadcast channel being an m-regular graph where m is at least 3, the method comprising:

~~connecting the first computer to a second computer;~~

attempting to send a message from the first computer to the second computer; and

when the attempt to send the message is unsuccessful, broadcasting from the first computer a connection port search message indicating that the first computer needs a connection; and

having a third computer not already connected to said first computer respond to said connection port search message in a manner as to maintain an m-regular graph.

<sup>7</sup>  
~~17.~~ (Original) The method of claim <sup>6</sup>/~~16~~ including:

when a third computer receives the connection port search message and the third computer also needs a connection, sending a message from the third computer to the first computer proposing that the first computer and third computer connect.

<sup>8</sup>  
~~18.~~ (Original) The method of claim <sup>7</sup>/~~17~~ including:

when the first computer receives the message proposing that the first computer and third computer connect, sending from the first computer to the third computer a message indicating that the first computer accepts the proposal to connect the first computer to the third computer.

<sup>9</sup>  
~~19.~~ (Original) The method of claim <sup>6</sup>/~~16~~ wherein each computer connected to the broadcast channel is connected to at least three other computers.

20. (Cancelled)

21. (Cancelled)

<sup>10</sup>  
~~22.~~ (Original) The method of claim <sup>6</sup>~~16~~ wherein the broadcasting includes sending the message to each computer to which the first computer is connected.

<sup>11</sup>  
~~23.~~ (Currently amended) A computer-readable medium containing instructions for controlling disconnecting of a computer from another computer, the computer and the other computer being connected to a broadcast channel, said broadcast channel being an m-regular graph where m is at least 3, comprising:

a component that, when the computer decides to disconnect from the other computer, the computer sends a disconnect message to the other computer, said disconnect message including a list of neighbors of the computer; and

<sup>3</sup>  
a component that, when the computer receives a disconnect message from another computer, the computer broadcasts a connection port search message <sup>on the broadcast channel</sup> to find a computer to which it can connect, <sup>in order to maintain an m-regular graph</sup> said computer to which it can connect being one of the neighbors on said list of neighbors.

<sup>12</sup>  
<sup>11</sup>  
~~24.~~ (Original) The computer-readable medium of claim ~~23~~ including:

a component that, when the computer receives a connection port search message and the computer needs to connect to another computer, sends to the computer that sent the connection port search message a port connection message indicating that the computer is proposing that the computer that sent the connection port search message connect to the computer.

<sup>13</sup>  
<sup>12</sup>  
~~25.~~ (Original) The computer-readable medium of claim ~~24~~ including:

a component that, when the computer receives a port connection message, connecting to the computer that sent the port connection message.

26. (Cancelled)

27. (Cancelled)

<sup>14</sup>  
~~28.~~ (Original) The computer-readable medium of claim <sup>11</sup>~~23~~ wherein the computers are connected via a TCP/IP connection.

<sup>15</sup>  
~~29.~~ (Original) The computer-readable medium of claim <sup>11</sup>~~23~~ wherein the computers that are connected to the broadcast channel are peers.

<sup>16</sup>  
~~30.~~ (Original) The computer-readable medium of claim <sup>11</sup>~~23~~ wherein the broadcast channel is implemented using the Internet.

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**REMARKS**

This communication is in response to the first Office Action dated November 5, 2003. Claims 9-30 are currently pending. Claims 1-8 have been withdrawn due to election of Claims 9-30 without traverse in response to a Restriction Requirement. In the Office Action, the Examiner noted that the Abstract is missing. An abstract has been provided herein on a separate sheet as requested by the Examiner. The Examiner also rejected Claims 9-30 as being obvious in view of U.S. Patent No. 6,618,752 to Moore et al. (Moore), U.S. Patent No. 6,353,599 to Bi et al. (Bi), and "Graph Theory with Applications" by Bondy et al. (Bondy).

**The Present Claimed Invention**

The claims of the present application are directed primarily towards the disconnection of a computer from a broadcast network (channel). While the present specification comprehensively covered all aspects of a broadcast network, the present claimed invention is directed towards only those specific aspects related to disconnection (voluntary or involuntary) of a computer from that network.

A connected computer disconnects from the broadcast channel either in a planned or unplanned manner. When a computer disconnects in a planned manner, it sends a disconnect message to each of its four neighbors. The disconnect message includes a list that identifies the four neighbors of the disconnecting computer. When a neighbor receives the disconnect message, it tries to connect to one of the computers on the list. In one embodiment, the first computer in the list will try to connect to the second computer in the list, and the third computer in the list will try to connect to the fourth computer in the list. If a computer cannot connect (*e.g.*, the first and second computers are already connected), then the computers may try connecting in various other combinations. If connections cannot be established, each computer broadcasts a message that it needs to establish a connection with another computer. When a



computer with an available internal port receives the message, it can then establish a connection with the computer that broadcast the message.

When a computer disconnects in an unplanned manner, such as resulting from a power failure, the neighbors connected to the disconnected computer recognize the disconnection when each attempts to send its next message to the now disconnected computer. Each former neighbor of the disconnected computer recognizes that it is short one connection (*i.e.*, it has a hole or empty port). When a connected computer detects that one of its neighbors is now disconnected, it broadcasts a port connection request on the broadcast channel, which indicates that it has one internal port that needs a connection. The port connection request identifies the call-in port of the requesting computer. When a connected computer that is also short a connection receives the connection request, it communicates with the requesting computer through its external port to establish a connection between the two computers.

It is possible that a planned or unplanned disconnection may result in two neighbors each having an empty internal port. In such a case, since they are neighbors, they are already connected and cannot fill their empty ports by connecting to each other. Such a condition is referred to as the "neighbors with empty ports" condition. Each neighbor broadcasts a port connection request when it detects that it has an empty port as described above. When a neighbor receives the port connection request from the other neighbor, it will recognize the condition that its neighbor also has an empty port.

To detect this condition, which would be a problem if not repaired, the first neighbor to receive the port connection request recognizes the condition and sends a condition check message to the other neighbor. The condition check message includes a list of the neighbors of the sending computer. When the receiving computer receives the list, it compares the list to its own list of neighbors. If the lists are different, then this condition has occurred in the large

regime and repair is needed. To repair this condition, the receiving computer will send a condition repair request to one of the neighbors of the sending computer which is not already a neighbor of the receiving computer. When the computer receives the condition repair request, it disconnects from one of its neighbors (other than the neighbor that is involved with the condition) and connects to the computer that sent the condition repair request. Thus, one of the original neighbors involved in the condition will have had a port filled.

However, two computers are still in need of a connection, the other original neighbor and the computer that is now disconnected from the computer that received the condition repair request. Those two computers send out port connection requests. If those two computers are not neighbors, then they will connect to each other when they receive the requests. If, however, the two computers are neighbors, then they repeat the condition repair process until two non-neighbors are in need of connections.

#### Distinctions Between the Prior Art and the Claimed Invention

The primary reference upon which the Examiner relies upon is the Moore patent. The Moore patent discloses a software method for multicasting information over large networks. The example given in Moore is the distribution of, for example, music to various client users over the Internet. Moore correctly identified that the client server architecture commonly used where a single server serves multiple streams of data to each of the clients can be limiting. In particular, the number of clients served is limited by the capacity of the server and the bandwidth of the server's connection to the network (such as the Internet).

Instead, Moore proposes what is characterized as a daisy chain arrangement where clients act as "mini-servers" to forward the data stream onto other clients. Perhaps this can be best seen in Figure 5B where the server 206 serves a data stream to a first child host 506. When a second child host 504 wishes to access the data stream, the child host 504 is connected to the child host

506, rather than to the original server 206. Figure 5C shows another network architecture which is similar to the daisy chaining of Figure 5B, but includes multiple branching into a tree structure. Figure 5D shows a two-level daisy chain tree structure. Importantly, in all of the network architectures shown in the Moore patent, in no instance can it be considered that the architecture of Moore describes a **regular graph**.

Furthermore, as noted by the Examiner, column 10 of the Moore patent does disclose a method for disconnecting one of the child hosts from the network. The method described in the Moore patent is a simplistic method which connects the upstream host to the downstream host of the disconnected computer.

The Bi patent is cited for the proposition of teaching the use of sending a connection port search message to find a computer that is available for connection.

The Bondy reference is cited for the general proposition of teaching graph theory as applied to computer systems. Bondy mentions that the use of graph theory can be applied to computer networks to insure greater reliability. However, there is no teaching in Bondy as to how to disconnect a computer from a network and have the remaining computers in the network form new interconnections.

In response to the Examiner's arguments, applicants have amended the independent claims 9, 16, and 23 to include limitations that are not fairly shown in the cited references and that are not rendered obvious by the cited references. Specifically, each of the independent claims now require that the broadcast channel forms an M-regular graph with its constituent computers. The corresponding dependent claims 14, 21, and 20 have been cancelled. Further, each of the independent claims have been amended to indicate the importance that the graph has an "M" value of at least 3. Therefore, the corresponding dependent claims related to that limitation have been deleted as well.

After review of the cited references, applicants believe that the amendments to the claims place this case in condition for allowance. In particular, the network architecture described by Moore clearly is not a graph structure, let alone an M-regular graph structure with an M at least equal to 3. Instead, the Moore patent discloses a computer architecture that is at best a tree structure where information and data only flow in one direction. In contrast, in a multicasting graph structure of the present invention, data flows from each computer to all of the other computers in its multicast list. The Examiner attempts to remedy the differences between the Moore patent and the claimed invention by citing Bondy. Still, it is difficult to see how it would have been obvious to combine the disconnection techniques of Moore with the graph theory teachings of Bondy.

As set forth in column 10 of Moore, the only discourse as to how a computer can leave the network while the network reconfigures itself is where in a daisy chain system, the client upstream and the client downstream of the disconnected computer form a connection. This protocol for disconnection is simplistic because the network architecture itself is simplistic. There is simply no other way to reconfigure the network upon having a computer leave. In contrast, because of the complexities of an architecture that incorporates graph theory ideas, the present invention provides important methods and techniques for reconfiguring the M-regular graph that is the computer network upon disconnection of a computer.

Therefore, claim 9 has been amended to indicate that when a voluntary disconnection takes place, the disconnecting computer **sends a list of its neighbors to all of its neighbors**. The neighbors of the first computer can then receive that list and **can attempt to connect to other computers on that list**. This type of complex disconnection and healing process of a regular graph computer network is not fairly shown in the Moore nor the Bondy references. For this reason, claims 9-12 and 15 are in condition for allowance.

Claims 16-19 and 22 relate to the situation where a computer is involuntarily disconnected from the M-regular graph computer network. Claim 16 has been amended to indicate that the healing process of the computer network is performed in a way such as to maintain the M-regular graph nature of the computer network. Once again, as noted above, because Moore teaches a simple non-graph architecture where disconnections are easily handled, there would be no incentive to combine the graph theory of Bondy with the Moore teachings. Therefore, claims 16-19 and 22 are in condition for allowance.

Claims 23-25 and 28-30 mirror claims 9-12 and 15. Thus, these claims are in condition for allowance for the same reasons as those claims.

As seen from the remarks set forth above, at the heart of this case is whether or not it is obvious to combine the deficient teachings of Moore with Bondy. Applicants respectfully submit that the Examiner has failed to carry the burden. The Examiner's conclusory remarks as to obvious cannot satisfy his burden under prevailing case law. According to controlling caselaw, the motivation to combine references cannot be based on mere common knowledge and common sense as to benefits that would result from such a combination, and instead must be based on specific teachings in the prior art, such as a specific suggestion in a prior art reference.

For example, last year the Federal Circuit rejected an argument by the PTO's Board of Patent Appeals and Interferences that the ability to combine the teachings of two prior art references to produce beneficial results was sufficient motivation to combine them, and overturned the Board's finding of obviousness because of the failure to provide a specific motivation in the prior art to combine the two prior art references.<sup>1</sup> The Manual of Patent Examining Procedure ("MPEP") provides similar instructions.<sup>2</sup>

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<sup>1</sup> In *In re Sang-Su Lee*, the Federal Circuit last year indicated the following:

Conversely, and in a similar manner to the arguments rejected by the Federal Circuit, the Examiner's motivation to combine these three prior art references is based solely on the alleged beneficial results that would result from combining them, with no motivation from the prior art cited to support the combination. Therefore, given the record, applicant respectfully submits that the Examiner's rejections are improper.

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The Nortrup reference describes a television set having a menu display by which the user can adjust various picture and audio functions; however, the Nortrup display does not include a demonstration of how to adjust the functions. The Thunderchopper Handbook describes the Thunderchopper game's video display as having a "demonstration mode" showing how to play the game . . . Lee appealed to the Board, arguing that . . . the prior art provided no teaching or motivation or suggestion to combine this reference [Thunderchopper] with Nortrup . . . On the matter of motivation to combine the Nortrup and Thunderchopper references, . . . review of the Examiner's Answer reveals that the examiner merely stated that both the Nortrup function menu and the Thunderchopper demonstration mode are program features and that the Thunderchopper mode "is user-friendly" and it functions as a tutorial, and that it would have been obvious to combine them.

When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., . . . *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)). . . .

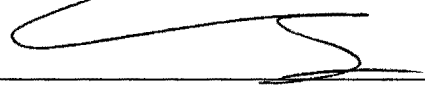
With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements . . . do not adequately address the issue of motivation to combine. *In re Sang-Su Lee*, 277 F.3d 1338, at 1341-1343, (Fed. Cir. 2002).

<sup>2</sup> To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art*, not in applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See Manual of Patent Examining Procedure, § 2143 (emphasis added).

In view of the foregoing, the claims pending in the application comply with the requirements of 35 U.S.C. § 112 and patentably define over the applied art. A Notice of Allowance is, therefore, respectfully requested. If the Examiner has any questions or believes a telephone conference would expedite prosecution of this application, the Examiner is encouraged to call the undersigned at (206) 359-6488.

Respectfully submitted,  
Perkins Coie LLP

Date: 12/11/03

  
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PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: FRED B. HOLT *ET AL.*

APPLICATION NO.: 09/629,577

FILED: JULY 31, 2000

FOR: LEAVING A BROADCAST CHANNEL

EXAMINER: DAVID R. LAZARO

ART UNIT: 2155

CONF. NO: 4317

Transmittal of Amendment Under 37 C.F.R. § 1.111

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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DEC 17 2003

Technology Center 2100

Sir:

1. Transmitted herewith are the following:

- ☒ Amendment Under 37 C.F.R. § 1.111
- ☐ Petition for -Month Extension of Time
- ☐ Terminal Disclaimer
- ☐ Sequence Listing printout, floppy diskette, matching declaration
- ☐ Information Disclosure Statement, Form PTO-1449 (modified),  
References
- ☐ Check in the amount of \$

2. Entity Status

- ☐ Small Entity Status (37 C.F.R. § 1.9 and § 1.27) has been established by a previously submitted Small Entity Statement.

3. Conditional Petition for Extension of Time:

Applicant petitions for an Extension of Time, if necessary, for timely submission of this transmittal and enclosures.



4. Fee Calculation and Payment

For:	(Col. 1) No. Filed	(Col. 2) No. Extra	Small Entity			Other Than a Small Entity	
			Rate	Fee	Rate	Fee	
Total Claims	24	0	x \$ 9 =	\$	or	x \$ 18 =	\$0
Independent Claims	4	0	x \$43 =	\$	or	x \$ 86 =	\$0
<input type="checkbox"/> Multiple Dependent Claim Presented			+ \$145 =	\$	or	+ \$290 =	\$
<input type="checkbox"/> Extension of Time Fee				\$			\$
*If the difference in Col. 1 is less than zero, enter "0" in Col. 2.			TOTAL	\$	or	TOTAL	\$0

5. Provisional Fee Authorization

Please charge any underpayment in fees for timely filing of this transmittal and enclosures to Deposit Account No. 50-0665.

Respectfully submitted,  
Perkins Coie LLP

Date: 12/11/03

  
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Registration No. 36,878

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